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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/825,255	04/15/2004	Gabriel L. Suciu	EH-10672 (04-183)	8122
34704	7590	09/09/2005		
BACHMAN & LAPOINTE, P.C. 900 CHAPEL STREET SUITE 1201 NEW HAVEN, CT 06510			EXAMINER WIEHE, NATHANIEL EDWARD	
			ART UNIT	PAPER NUMBER
			3745	

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/825,255	SUCIU ET AL.	
	Examiner	Art Unit	
	Nathan Wiehe	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 18-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner..
- 10) ☒ The drawing(s) filed on 15 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. <u>08252005</u> . |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>04152004</u> . | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-17, drawn to apparatus, classified in class 416, subclass 198A.
 - II. Claims 18-21, drawn to method, classified in class 416, subclass 198A.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions claims 1-17 and 18-21 are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product as claimed can be made by using a pre-selected standard compression force.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with William Slate on 25 August 2005 a provisional election was made with traverse to prosecute the invention of the apparatus, claims 1-17. Affirmation of this election must be made by applicant in replying to this Office action. Claims 18-21 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one

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or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Information Disclosure Statement

6. The information disclosure statement (IDS) submitted on 15 April 2004 is noted. The submission is in compliance with the provisions of 37 CFR 1.97 and 1.98. Accordingly, the information disclosure statement is being considered by the examiner.

Specification

7. The disclosure is objected to because of the following informalities:

In paragraph [0018] "rotors tack" should read --rotor stack--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 4, 6, 12, 13, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Burge (6,267,553). Burge discloses a turbine engine including a shaft (104) carrying and causing rotation of a plurality of disk (62-70) coupled with a plurality of spacers (72, 74) with outwardly concave portions (78,84). Burge's spacers are in an interference fit with collar portions (80,82,86,88) of disks (62-66) and under a static preload force. Burge discloses that the spacer outwardly concave portions (78,84)

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axially deflect during operation. Due to the deflection, preload condition, and shape of the spacers an increasing longitudinal compression force would be provided to disks as the rotational speed of the turbine increased. In regard to claims 6 and 13, Burge is silent as to the exact rotational speed range of the turbine engine. However, Burge's spacer would inherently be capable of having an outwardly concave shape and exhibit a continuously increasing force throughout the turbine engines entire operating range including speeds in excess of 5000 rpm.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burge. Burge discloses the invention substantially as claimed except for explicitly stating the longitudinal span of the spacer's first portion. Applicant has not discloses that having a longitudinal span of at least 2.0 cm provides an advantage or solves a stated problem. Therefore, it would have been prima facie obvious to modify the invention of Burge to obtain the invention as specified in claim 2 because such a modification would have been considered a mere design consideration which fails to patentably distinguish over the prior art of Burge.

12. Claims 1, 3, 5, 7-12, 15, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naudet in view of Burge. Naudet discloses a turbine engine

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including a high speed shaft carrying a plurality of high speed compressor disks (1-7), which extend from radially inner apertures to radially outer peripheries, and unitarily formed spacers (between disk with welds (8)). Naudet invention does not include off-center tie members. Naudet does not disclose the use of outwardly concave spacers. Burge discloses the use of outwardly concave disk spacers (78,84) in a turbine engine, which are in an interference fit with collar portions (80,82,86,88) of disk (62-66). Burge also discloses that the spacers axially deflect during operation. Burge further discloses that the spacers are under an axial preload. Due to the spacer's shape and the preload they would provide a continuously increasing compression force throughout the turbine engine's entire rotational speed range. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the spacer of Naudet by using an outwardly concave spacer and interference fittings, as taught by Burge in order to reduce the radial strain and bending stress of the spacers.

13. In regard to claim 9, the modified invention of Naudet above discloses the invention substantially as claimed except for the explicit longitudinal span of the spacer's first portion. Applicant has not discloses that having a longitudinal span of at least 2.0 cm provides an advantage or solves a stated problem. Therefore, it would have been prima facie obvious to further modify the invention of Naudet to obtain the invention as specified in claim 9 because such a modification would have been considered a mere design consideration which fails to patentably distinguish over the prior art of Naudet.

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14. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Naudet in view of Burge as applied to claim 12 above, and further in view of an engineering expedient. Naudet as modified in the rejection of claim 12 above discloses the invention substantially as claimed except that the first force is 50-200kN. It is common practice in the art of turbine engines to determine forces based on the specific dimensions of the turbine engine. Further, the applicant states, on page 12, "An exemplary precompression force is 50-200kN. Advantageous force will depend upon the size of the rotor stack, with longer stacks requiring greater force." Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the precompression force in Naudet based on the specific size of the rotor stack in the turbine engine as an engineering expedient.

Prior Art

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The patent issued to Vollinger discloses an outwardly convex disk space without tie rods. The patent issued to Koff shows the state of the art. The patent issued to Ress is another example of outwardly concave disk spacers. The patent issued to Bobo discloses outwardly convex disk spacers with varying tensile stresses during operation.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Wiehe whose telephone number is (571)272-8648. The examiner can normally be reached on M-F.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (571)272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Nathan Wiehe
Examiner
Art Unit 3745



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9/6/05